GISMOWA - GIS assisted monitoring of drinking water quality

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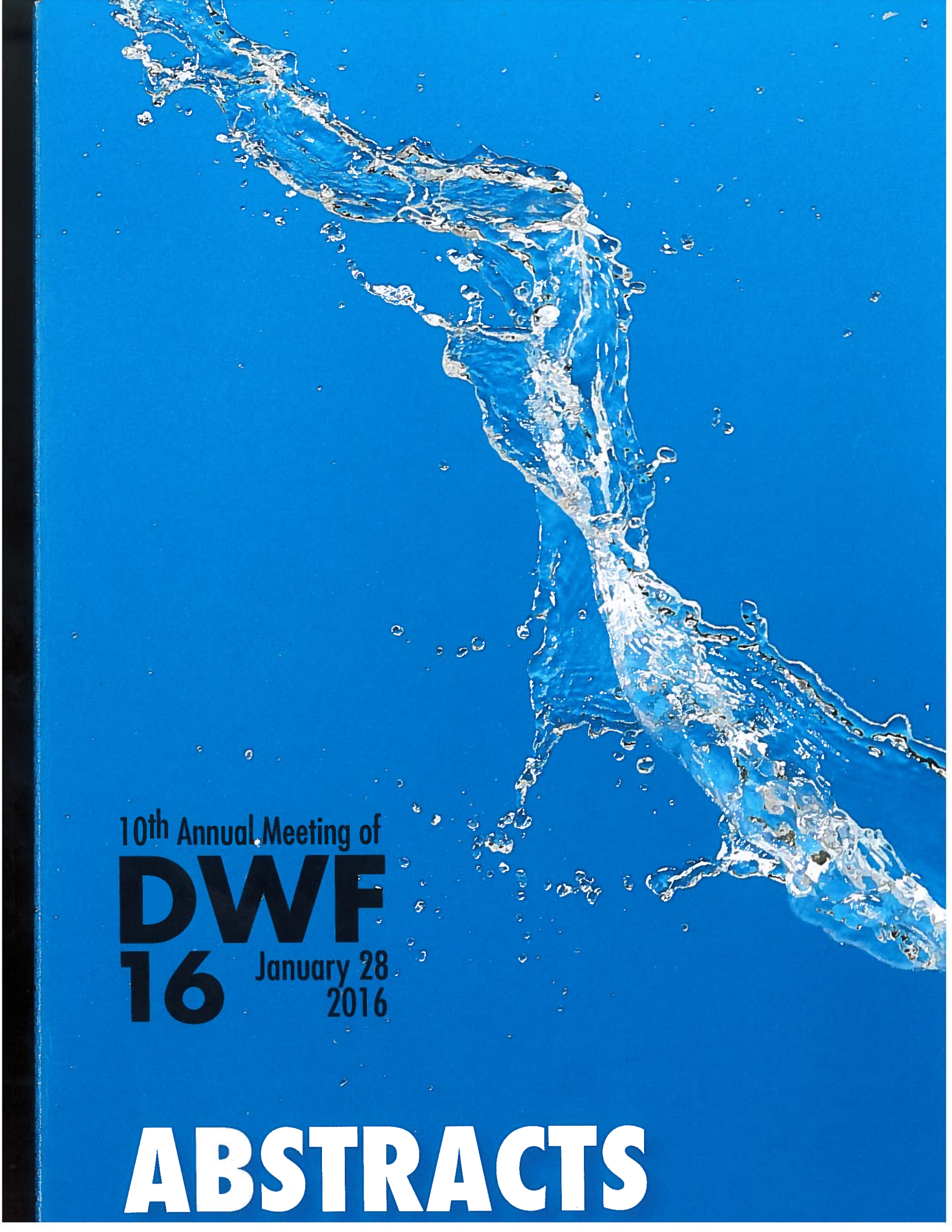

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ABSTRACTS

GISMOWA – GIS assisted monitoring of drinking water quality

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Abstract

In-depth knowledge of the water distribution system is crucial to develop water quality baseline data at representative sites and to provide a pro-active approach to deal with emerging water quality issues. GISMOWA is a new risk-based analysis tool to identify and prioritise pipe segments for monitoring water quality and to comply with existing monitoring guidelines. The tool was designed to integrate in a GIS environment multiple parameters categorized as 1) Weaknesses in the system, e.g. residence time, 2) External threats, e.g. contaminated sites, and 3) Sensitive consumers, e.g. hospitals.

A multi-criteria decision-making approach was applied to evaluate multiple sampling site parameters and map zones particularly suitable for water quality monitoring. Applied on Danish water distribution systems, GISMOWA was shown to be a transparent and simple-to-use tool that facilitates complete overview of the distribution system, sensitive consumers and consumers in general, which is a precondition for a HACCP-based monitoring strategy of drinking water.

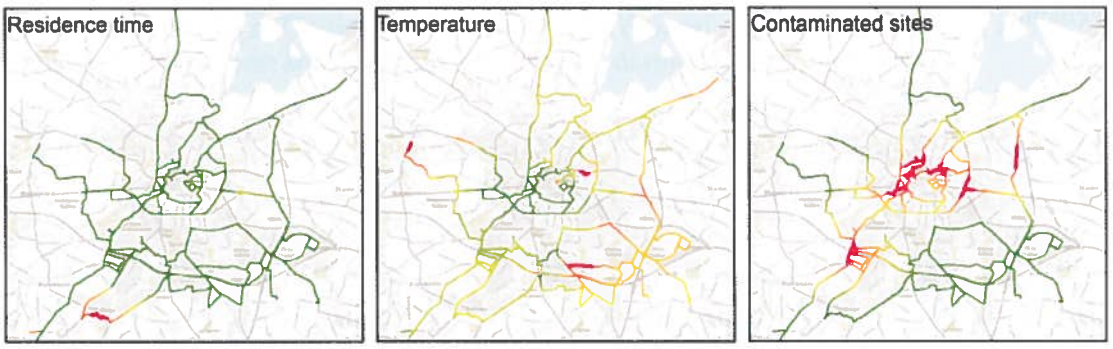

Figure 1 Example of suitability maps for three selected parameters projected onto the main piping network in Odense, Denmark. Data collected from VCS Denmark. Green shows pipe segments of low suitability and red visualises pipe segments of high suitability for monitoring.

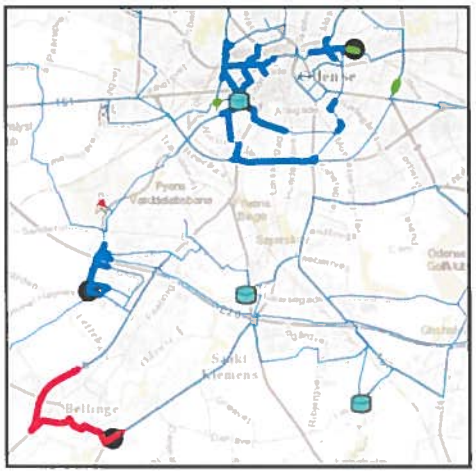

Figure 2 Example of weighted overlay results projected onto the main piping network in Odense, Denmark. Thin blue lines outlines the main piping network, while fat lines show pipe stretches particularly suitable for monitoring of sensitive consumers (blue), microbial regrowth (red), and intrusion of contaminants (green).

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